

Pre-Installation Checklist



Technical Data

Requirements

Scope of Delivery



OptiMax™ Synthesis Workstation Site Requirements for Standard Equipment

METTLER TOLEDO

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Pre-Installation Checklist

For OptiMax 1001

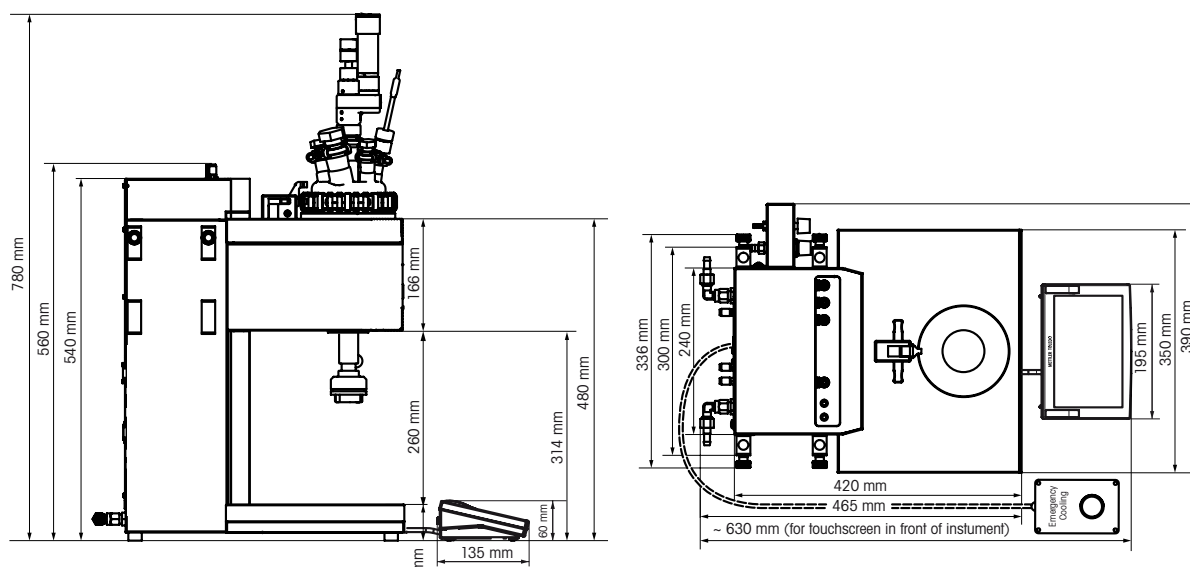
This document outlines the site requirements for a successful installation of the OptiMax system and provides information about technical data, construction materials, and standard delivery.

For more detailed information please check the Synthesis Workstations catalog and the Operating Instructions of the OptiMax.

Advance preparation of the installation area should be completed before installation of the instrument. Take the time now to do the site preparation necessary to allow for a smooth transition from instrument delivery to installation completion. Make sure that there is available power supply, purge gas (for the instrument and for the reaction), and external cooling capacities.

Space Requirements

The space requirements take into account only the physical size of the OptiMax including cooling connector and touchscreen. Additional space is needed for accessories (lab bars, stirrer, pH meter, flowmeter, cryostat, etc.).



OptiMax 1001

- Weight**
- **OptiMax 1001:** 35 kg, including touchscreen

- Power Supply**
- **Voltage:** 100 V to 240 V AC
 - **Max. voltage fluctuation:** $\pm 10\%$
 - **Frequency:** 50/60 Hz
 - **Power consumption:** Max. 1290 VA

- Required Instrument Purge Gas**
- In order to prevent internal corrosion from corrosive gases or moisture, the OptiMax has to be purged with non-corrosive dry gas (e.g. dry air, nitrogen, argon). The dew point of the gas must be lower than the temperature of the coolant. Connect to the **Purge Internal** quick connect coupling at the back of the OptiMax.

- **Ideal pressure of purge gas:** 0.05 bar/0.73 psi
- **Max. inlet pressure of purge gas:** 7 bar/100 psi
- **Min. gas flow of purge gas:** 3 L/min for instrument purge
(inlet combined with reactor purge)
- **Gas connection:** Quick connect coupling for tubing with inner \varnothing 4 mm
(included in delivery)

Notice: Operation without purge will damage the thermostat.

- Optional Reaction Purge Gas**
- Reaction purge gas can be optionally used to flush the reaction vessel. This reduces the concentration of humidity and oxygen as they might impact the chemical process. Connect to the inlet for Reaction purge gas at the back of the OptiMax labelled **Inert In** and the outlet on top of the OptiMax labelled **Inert Out**.

- **Ideal pressure of purge gas:** As required by experiment
- **Max. inlet pressure of purge gas:** 7 bar/100 psi
- **Gas connection:** Quick connect coupling for tubing with inner \varnothing 4 mm
(included in delivery)

Notice: The OptiMax has two gas inlets. They can be attached to the same gas source or different gasses can be used (reaction vs. instrument purge).

- Optional Stirrer Purge Gas**
- Reaction purge gas can be optionally used for the overhead stirrer motor mechanism. Using stirrer purge gas prevents corrosion of the stirring mechanism when working with corrosive gases. Connect to the inlet for stirrer purge gas at the back of the OptiMax labelled **Purge In** and the outlet on top of the OptiMax labelled **Purge Out**.

- Add max inlet pressure and gas connection as in the section above.

External Cooling

The OptiMax requires a constant flow of coolant liquid. Operation without any will trigger an emergency program. If the water is not free of solids, a filter should be installed in the inlet line.

Use 103298 antistatic additive when silicone oil is used as coolant.

Notice: Ensure chemical compatibility between cooling liquid and all wetted materials. Do not use DW-Therm or solutions of high chlorine concentration like NaCl or CaCl₂.

- **Coolant type:** Water, water and ethylene glycol mixtures, water and propylene glycol mixtures, silicone oil
- **Min. flow of cooling medium:** 2 L/min (at 15 °C)
- **Max. pressure of cooling media:** Without flowmeter: 3.5 bar; with flowmeter: 2 bar
- **Wetted materials in cooling circuit:** PVC, PTFE, PVDF, copper
- **Coolant connections on thermostat:** Hose barbs for tubing with inner Ø 8 mm
- **Requirments tap water:** 2 L/min at 15 °C
- **Required cooling capacity with external cooling/thermostat:**

1000 W at 20 °C	Accessible jacket temperature (Tj) range: 180 °C to –20 °C
750 W at 0 °C	180 °C to –30 °C
750 W at –10 °C	180 °C to –40 °C

Ambient Conditions

According to EN 61010-1, the following requirements must be fulfilled for safe operation of the OptiMax system.

- **Ambient temperature:** 5 °C to 40 °C
- **Max. relative atmospheric humidity:** 80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C, non-condensing
- **Altitude:** Up to 2000 m above sea level
- **Pollution degree:** 2

Temperature Range Limits

Temperature controlled by OptiMax:

- **Jacket temperature, Tj:** –40 °C to 180 °C
- **Reactor content temperature, Tr:** –40 °C to 180 °C

Notice: The maximum and minimum reactor temperature (Tr) depends on heat transfer through the jacket and heat generated by the reaction. The temperature range of Tr/Tj is depending on the temperature of the coolant and the cooling power of the used external cooling system.

Temperature range of external cooling coolant:

- **Coolant temperature, Tc:** –40 °C to 60 °C

Notice: if the maximum Tc is exceeded, OptiMax will switch off automatically to prevent instrument damage.

Connectivity

CAN bus to connect to METTLER TOLEDO accessories, USB port, Ethernet and electrical connections.

- **USB:** Support of USB 2.0
- **Electrical connectors:** RS232, USB, CAN, Ethernet, Safety Relay, Safeguard button, and touchscreen
- **Cable length:** Limited to 3 m for RS232, USB, CAN, Ethernet, Safety Relay, Safeguard button, and touchscreen
- **Safety Relay:** 30 VDC/1 A
- **CAN:** Max. 2 A

 User Interface

- **TFT touchscreen dimensions:** 135 mm x 195 mm (5.3" x 7.7"), protected by a replaceable cover
- **Supported languages:** English, German, French, Spanish, Japanese, Chinese

 Material Used for Construction

- **Cover plate:** Stainless steel, PFA/FEP-coated
- **Housing material:** Powder-coated stainless steel
- **Connectors for purge gas:** Stainless steel, nickel-plated brass
- **Purge gas lines:** PVC, FEP, PP, PVDF, PTFE, aluminum
- **Coolant tubings:** PVC, PTFE, PVDF, copper
- **Coolant connectors:** Nickel-plated brass
- **Flowmeters:** Stainless steel, acrylic, HDPE
- **Holder for lab bars:** Aluminum
- **LEMO connectors for Tr sensors and overhead stirrers:** Chrome-plated brass with protection cap in PSU
- **Reactor window:** Borosilicate glass
- **Receptacles for reactors:** Anodized aluminum
- **Fixing rings of thermostats:** PTFE / 25% carbon
- **Anti twist protection:** PEEK HPV and aluminum
- **USB connector:** Stainless steel with protection cap in POM
- **On/Off switch:** Stainless steel
- **Stirrer shaft, blade:** Borosilicate glass or Alloy C-22, PTFE
- **Overhead stirrer:** PTFE, PEEK, aluminum, steel
- **Tr sensor:** Borosilicate glass or Alloy C-22
- **Reactors:** Borosilicate glass and PTFE
- **Touchscreen:** PA12, aluminum
- **Protective cover for touchscreen:** Barex® resin

□ **Scope of Delivery**

The OptiMax is shipped with*:

- TFT touchscreen with protective cover, cable length 1 m
- PVC hose for reflux condenser, Ø 8/12 mm, length 5 m
- 2 PVC industrial hoses for coolant, 15 bar, Ø 8/14 mm, length 2.5 m
- PVC industrial hose for purge gas, 18 bar, Ø 4/10 mm, length 2 m
- PVC hoses for purge gas, Ø 4/6 mm, length 2 m
- 4 Y-pieces for purge gas tubing
- 3 reducing connectors for purge gas tubing
- 5 quick connect couplings for purge gas inlet
- 4 hose clamps for PVC tube
- Flow indicator for coolant
- 4 knurled screws, M6 x 10 mm
- Reactor block plug for bottom drain valve opening
- O-ring for 51162860 plug, Ø 50.39 mm x 3.53 mm
- Bubble counter
- Magnetic bubble counter holder
- Accessories holder set
- 2 glass adapters ST19/26-GL14
- 2 screw caps GL14, with aperture
- 2 silicone rubber sealing rings for screw cap GL14, aperture 6 mm
- Purge gas regulation valve
- 4 lab bars, 600 mm x 14 mm
- Safeguard button
- Overhead stirrer drive complete
- Country specific power cable, length 3 m
- Quick Start Guide
- Factory Test Report (EN)

* Glassware and other accessories have to be ordered separately.

OptiMax™ Synthesis Workstation

Site Requirements for Standard Equipment

www.mt.com/OptiMax

For more information

METTLER TOLEDO Group

Automated Reactors and In-situ Analysis
Local contact: www.mt.com/contacts

Subject to technical changes
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